

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Mark L. Jensen et al.

Examiner: Jonathan S. Crepeau

Serial No.: 10/807,214

Group Art Unit: 1745

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Attorney Docket: 1327.008US2

Title: METHOD AND APPARATUS FOR INTEGRATED BATTERY-CAPACITOR DEVICES

**PRE-APPEAL BRIEF REQUEST FOR REVIEW (Doc. Code AP.PRE.REQ)**

Mail Stop AF, Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Applicant respectfully requests review of the final rejection in the above-identified application. No amendments are being filed with this request. This request is being filed with a Notice of Appeal. The Pre-Appeal Brief Review is requested for the reasons stated herein.

**REMARKS**

Applicant has carefully reviewed and considered the Final Office Action of August 29, 2007. Claims 1-21, 28-30, 37, 42-54, and 79 are cancelled. Claims 22-27, 31-36, 38-41, 55-78, and 80-91 are pending.

***Claim Rejections – U.S.C. § 103***

**1) The Applicable Law for Rejections under 35 U.S.C. § 103:** In order to reject a claim based on the rationale of “Combining Prior Art Elements According to Known Methods to Yield Predictable Results” (see MPEP §2143), the Examiner must resolve the *Graham* factual inquiries:

“As reiterated by the Supreme Court in *KSR*, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court are as follows:

- (A) [ Determining the scope and content of the prior art; ]
- (B) Ascertaining the differences between the claimed invention and the prior art; and
- (C) Resolving the level of ordinary skill in the pertinent art.”

*M.P.E.P.* §2141(II) (from 8<sup>th</sup> Edition 6<sup>th</sup> revision, which has a typo in its (A), corrected above). Then (see MPEP §2143(A)), the Examiner must articulate the following:

- “(1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;
- (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;
- (3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and
- (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.”

**2) Analysis of the §103 Rejections:** In Section 2 of the 8/29/07 Final Office Action, claims 22-27, 31-36, 38-41, 55-78, and 80-91 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,448,110 (hereinafter “*Tuttle et al.*”). Applicants traverse. The Examiner asserts that *Tuttle et al.* show an enclosed transceiver device comprising a battery 60 located on a substrate 78, a capacitor 62 on the battery,

and an integrated circuit (64) on the capacitor (see Fig. 5B). Applicants agree with this much of the FOA.

However, Applicant respectfully submits that *Tuttle et al.* do not describe or suggest, nor is it obvious to form a thin-film battery and capacitor by successively deposited layers on the same substrate. Rather, *Tuttle* teaches placing or aligning substantially completed batteries and separately completed capacitor(s) on the assembly and adhesively connecting the parts.

Regarding claim 24, the Examiner does not separately address this claim, which recites “successively depositing a plurality of thin-film layers on the substrate, the plurality of successively deposited layers forming a solid-state battery and a capacitor electrically connected to one another.” The successive successively depositing a plurality of thin-film layers is not described or suggested in the *Tuttle et al.* (*Tuttle et al.* merely state that “various modifications and changes may be made” without describing what those might be). Thus, the Examiner has failed to provide a *prima facie* case of obviousness, since the prior art reference does not **teach or suggest all the claim limitations**. *M.P.E.P.* § 2142, *In re Vaeck*.

The Examiner asserts

“ The reference further does not expressly teach that the battery and/or capacitor layers are “successively” deposited on the substrate, as recited in claims 24, 27, 31, 33, 63-68, 77, and 78. However, the reference provides sufficient guidance for the artisan to manufacture the apparatus in this way. First, it is noted that in column 9, line 25 et seq., it is disclosed that the components of the apparatus (i.e., thin film battery, capacitor, and integrated circuit) are adhered together with conductive epoxy, suggesting that the components are pre-fabricated. However, at column 12, line 64, the reference discloses the following:

For example, various modifications and changes may be made in the antenna configurations, battery arrangements (such as battery stacking), device materials, device **fabrication steps**, and the functional block diagrams without departing from the scope of this invention. **The various off-chip components such as the antenna, battery, and capacitor are manufactured on-chip in alternate and equivalent embodiments.** (emphasis added).”

However, *Tuttle et al.* fail to describe or enable any such **battery and capacitor** that are both manufactured on-chip, much less that of the present claimed invention, where the battery and capacitor are formed of successively deposited thin-film layers. It is impermissible for the Examiner to use hindsight from the present application to assert that a prior-art reference, which merely says “various modifications and changes may be made,” would lead one of skill in the art to conclude that the reference teaches any particular modification or change such as that of the present claimed invention. Applicant respectfully submits that the reference does not provide “sufficient guidance for the artisan” as asserted by the Examiner. If the Examiner is relying on common knowledge or taking Official Notice of such guidance, Applicant traversed and respectfully requested under MPEP § 2144.03 that the Examiner provide documentary evidence. The Examiner asserted that US 5,827,415 and US 6,229,227 that say electrodes or on-chip resistors can be formed by thin-film deposition. Applicants still contend that these do not support the assertion that forming both a battery and capacitor by successive thin-film depositions are obvious. Since the Office Action failed to articulate a reason for the combination (as per *KSR*) to provide a *prima facie* case of obviousness, reconsideration is respectfully requested.

Regarding claims 36 and 55-59 of the present invention, the Examiner asserted that the *Tuttle et al.* substrate comprises a polymer such as polyester or polyethylene which can be laminated with metal, PVDC, or SiN (see *Tuttle et al.*, col. 9, line 20). Applicant respectfully submits that *Tuttle et al.* does not describe or suggest a substrate comprising a polymer having a melting point substantially below 700 degrees centigrade, wherein the layers are deposited as successive thin-film layers as claims 36 and 55 of the presently claimed invention do. Furthermore, Applicant respectfully submits that *Tuttle et al.* fails to describe or suggest a substrate that includes a metal foil, a ceramic, or a glass as recited in claims 56 and 57, 58, and 59 respectively. Although *Tuttle et al.* describes an embodiment where their: "Base starting material includes a first or base polymer layer 78, such as polyester or polyethylene, which is laminated with a relatively impermeable material such as metal film, PVDC, or silicon nitride," this does not describe or suggest the limitations of metal foil, a ceramic, or a glass as recited in the above-listed claims. Thus, the Examiner has failed to provide a *prima facie* case of obviousness, since the prior art reference (or references when combined) do not **teach or suggest all the claim limitations**. *M.P.E.P.* § 2142, *In re Vaeck*. Reconsideration is requested.

Regarding claims 27 and 31 of the present invention, among others, the Examiner asserted that *Tuttle et al.* describe an insulating layer (100) that is deposited on the device and traces ("through vial" (sic, should be "through vias")) (128) that electrically interconnect the components (see Fig. 6E of *Tuttle et al.*). Applicant respectfully disagrees, in that *Tuttle et al.* describe that the insulating layer 100 is a **prefabricated** insulating layer 100 that is **laid** over the battery/capacitor/IC stack (column 9 lines 48-50, emphasis added), not an insulating layer that is deposited (i.e., formed) in place as described and claimed. Further, these claims depend on claim 24, which appears in condition for allowance as argued above, and thus form combinations that must be considered as a whole. Reconsideration and withdrawal of the rejection are respectfully requested.

Regarding claims 90 and 91 of the present invention, the Examiner asserted that *Tuttle et al.* describe an encapsulation layer (114) that is present on the device. However, having an encapsulation layer **present on the device** is not the limitation recited in these claims, rather they recite "**depositing** an encapsulation layer on the combined battery and device apparatus." (Emphasis added.) In contrast, *Tuttle et al.* describe "This device includes, in combination, an integrated circuit (IC) which is mounted in an approximately one inch square package and is **encapsulated**, for example **laminated**, in a flexible or rigid thin film material." (Emphasis added.) Further, these claims depend from claims 24 and 31, respectively (and which appear to be in condition for allowance for the reasons argued above), and must be considered as a whole.

Regarding claims 88 and 89 of the present invention, the Examiner asserted that *Tuttle et al.* describes a recharging circuit that is present in the integrated circuit (see *Tuttle et al.*, col. 11, line 5).

These claims depend from claims 24 and 31, respectively (and which appear to be in condition for allowance for the reasons argued above), and must be considered as a whole. The Examiner admitted on page 4 of the March 12, 2007, Office Action that *Tuttle et al.* does not expressly teach that one or both electrodes contain an intercalation material, as recited in each of the independent claims. The Examiner asserted, however, that the invention as a **whole would have been obvious** to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use such materials in the battery of *Tuttle et al.* The Examiner however is required to provide documentation showing a prior art reference (or references when combined) that **teach or suggest all the claim limitations**. *M.P.E.P.* § 2142, *In re Vaeck*. Thus, the Examiner has failed to provide a *prima facie* case of obviousness, since the prior art reference (or references when combined) do not **teach or suggest all the claim limitations**. If the Examiner is relying on common knowledge or taking Official Notice of some other teaching, Applicant traverses this finding and respectfully requests under MPEP § 2144.03 that the Examiner provide documentary evidence in the next Office action if the rejection is to be maintained. *See* 37 CFR 1.104(c)(2). *See also Zurko*, 258 F.3d at 1386, 59 USPQ2d at 1697. Thus, these claims appear to be in condition for allowance.

Regarding claims 24, 27, 31, 33, 63-68, 77, and 78, the Examiner further admitted on page 4 of the March 12, 2007, Office Action that *Tuttle et al.* does not expressly teach that the battery and/or capacitor layers are "successively" deposited on the substrate, as recited in claims 24, 27, 31, 33, 63-68, 77, and 78. The Examiner asserted, however, that *Tuttle et al.* teaches that on-chip fabrication techniques are at least equivalent to off-chip techniques, and that this would render obvious the claimed steps of successively depositing layers on a substrate as recited in claims 24, 27, 31, 33, 63-68, 77, and 78. The Examiner also asserted that, absent evidence to the contrary, the reordering of method steps is generally not sufficient to patentably distinguish over a reference. Applicant respectfully traverses. It is the Examiner who bears the initial burden of showing obviousness. Applicant respectfully contends that depositing thin-film layers successively on a substrate is not a mere reordering of steps, since depositing thin films to form individual batteries and capacitors requires at least a substrate for each component (to be able to handle the devices) plus the substrate to which they are adhesively connected in order to build the device of *Tuttle et al.* In contrast, depositing the layers successively on a substrate can use as little as a single substrate—something not described or suggested by *Tuttle et al.* Since the Office Action failed to provide a *prima facie* case of obviousness (i.e., it did not provide a prior art reference (or references when combined) that **teach or suggest all the claim limitations** *M.P.E.P.* § 2142, *In re Vaeck*), claims 24, 27, 31, 33, 63-68, 77, and 78 appear to be in condition for allowance, and reconsideration is respectfully requested.

Regarding claims 39, 40, 67, 77, or 78, the Examiner also admitted on page 5 of the March 12, 2007, Office Action that *Tuttle et al.* does not expressly teach that a battery and a capacitor are located

next to each other on the substrate as recited in claims 39, 40, 67, 77, or 78. The Examiner asserted, however, that the claimed side-by-side configurations of the battery and capacitor, and additionally the capacitor base layer configurations of claims 65 and 66 are considered to be mere rearrangements of the components of *Tuttle et al.* that would be obvious to a person of skill in the art. Applicant respectfully traverses. If the Examiner is relying on common knowledge or taking Official Notice of some other teaching, Applicant traverses this finding and respectfully requests under MPEP § 2144.03 that the Examiner provide documentary evidence in the next Office action if the rejection is to be maintained. *See* 37 CFR 1.104(c)(2). *See also Zurko*, 258 F.3d at 1386, 59 USPQ2d at 1697. Since the Office Action failed to provide a *prima facie* case of obviousness, these claims appear to be in condition for allowance, and reconsideration is respectfully requested.

Finally, the Examiner admitted on page 5 of the March 12, 2007, Office Action that *Tuttle et al.* does not teach that the assembly is curved so as to have a concave face and a convex face, as recited in claims 35, 60-62, 69-71, and 75. The Examiner asserted, however, that it has been held that changes in shape are generally not patentably significant unless a new or unexpected result is achieved (MPEP 2144.04). Applicant respectfully traverses. Applicant's curved configuration allows the external case of a device such as a cell phone or calculator to be made of such a curved shell (as described in paragraphs [0238] and [0241] and Figures 15K and 15L of the present application). If the Examiner is relying on common knowledge or taking Official Notice of some other teaching, Applicant traverses this finding and respectfully requests under MPEP § 2144.03 that the Examiner provide documentary evidence in the next Office action if the rejection is to be maintained. *See* 37 CFR 1.104(c)(2). *See also Zurko*, 258 F.3d at 1386, 59 USPQ2d at 1697. Since the Office Action failed to provide a *prima facie* case of obviousness (i.e., it did not provide a prior art reference (or references when combined) that **teach or suggest all the claim limitations** *M.P.E.P.* § 2142, *In re Vaeck*), claims 35, 60-62, 69-71, and 75 appear to be in condition for allowance, and reconsideration and withdrawal of the rejection are respectfully requested.

### **CONCLUSION**

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (952-435-0201) to facilitate prosecution of this application. Please charge any required fee to Deposit Account number 502931.

Respectfully submitted,  
By their Representatives,

Date: December 4, 2007

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